Nokia Customer Care
6255/6255i/6256/6256i (RM-19)
Mobile Terminal

Antenna Description and Troubleshooting

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Introduction

This troubleshooting guide addresses potential failures that affect antenna performance of the 6255/6255i/6256/6256i, and discusses methods for correction of these failures.

Whip Antenna

Check the following minimum visual quality standards of the whip assembly:

- No physical cracks or mechanical defects.
- No excess oil, dirt, or particles appear on the parts.
- Whip cap and sheath over the mold parting line (flash or offset) is less than 0.1 mm.
- NiTi extrusion must completely cover the NiTi wire. No uncovered NiTi wire can be seen from the tube side.
- Proper printing is present (found on the plastic connector).
- Whip cap must be perpendicular to the NiTi wire (maximum of 5°).
- Antenna straw must not appear twisted, cracked, bent, or discolored.
- No gate flash greater than 0.1 mm anywhere on the assembly.
- Feed contact must appear at a 45-degree angle and must be free from damage, deformation, or unusual bending.
- Straw must be approximately 5.0mm from the end of the split bottom stop.

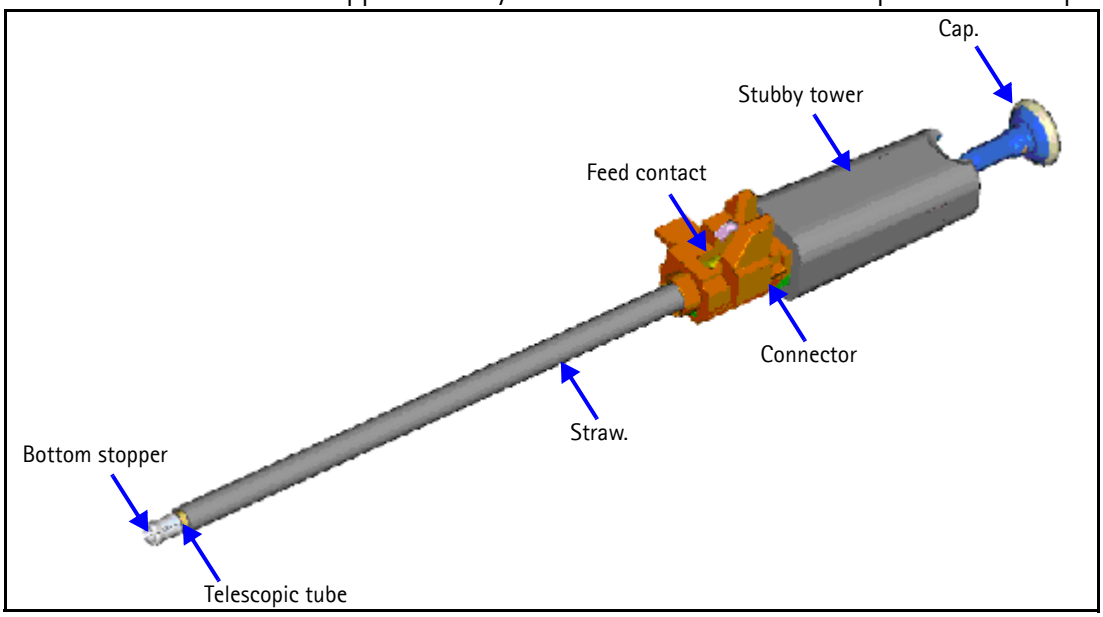

Figure 1: Whip antenna assembly

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In addition, the connector area includes the NMP code, date code, and supplier information.

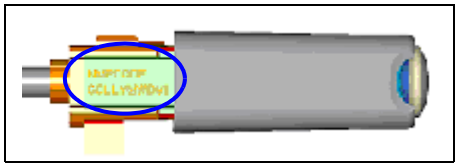

Figure 2: NMP code, date code, and supplier information area

The whip antenna is shipped fully retracted with the telescopic section fully collapsed. The feed contact must appear at a 45-degree angle and must be free from damage, deformation, or unusual bending. The straw must be approximately 5.0mm from the end of the bottom stop.

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Failures and Corrective Measures

Figure 3: Whip retracted and whip extended

Note in Figure 3 that when the whip is properly installed, the cap clicks into the antenna tower when the whip is fully retracted. When fully extended, the length from the end of antenna tower to the top of the cap must be around 109mm.

Damaged Whips

Figure 4 shows what the whip must look like when it is retracted and extended. If the whip is damaged, replace it.

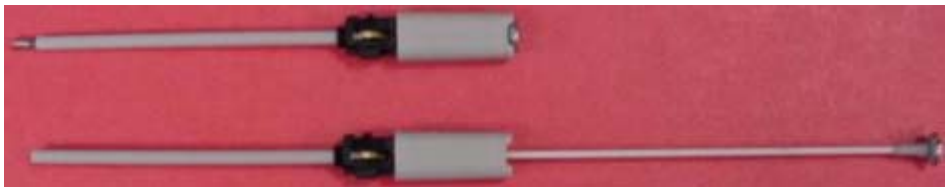

Figure 4: Whip stand-alone in retracted and extended positions

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Antenna Position into D-cover

The internal antenna and whip are assembled into the D-cover as shown in Figure 5. If no internal antenna is installed, the antenna gain will be degraded by more than 25 dB.

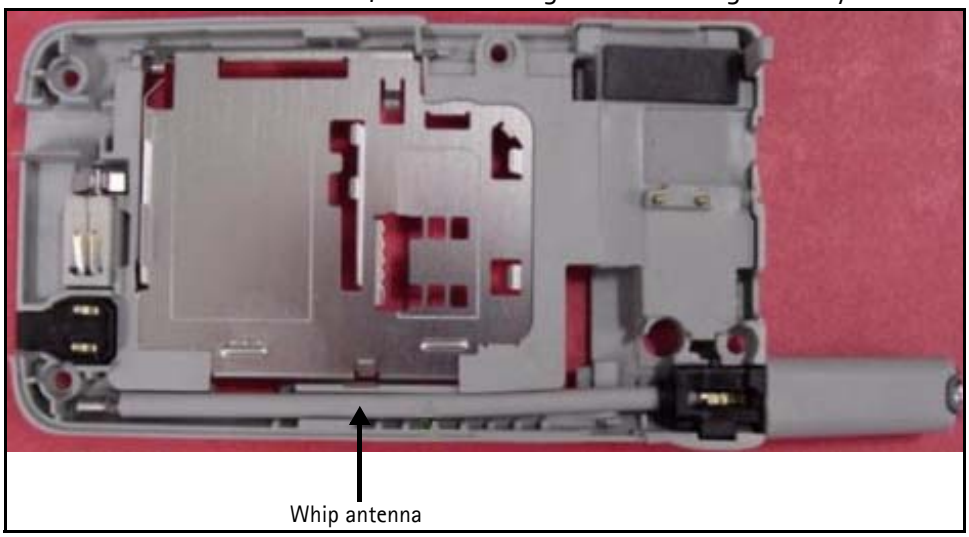

Figure 5: D-cover assembly

- If the whip antenna is missing, install one.
- If any part of the whip/stub antenna looks obviously damaged, then replace the whip/stub antenna.

Note: To take the whip/stub antenna out of the D-cover, slightly twist the antenna to release locking mechanism and take it out.

Damaged RF Feed Pin

The whip antenna has a spring clip feed contact that must properly touch the PWB. If the RF feed pin of the whip antenna does not touch the PWB, the antenna gain will degrade by more than 25 dB.

Figure 6: Spring clip feed contact on the whip antenna

- If the RF feed pin is broken, or bent such that the pin does not touch the PWB, replace the whip antenna.
- If the spring for the RF feed pin damaged, replace the whip antenna.

Obstructed RF Feed Pad or Missing Matching Circuit

If any portion of the RF feed or ground pin is obstructed, removed, or covered, the RF pin will not touch the PWB and the antenna performance will degrade. If the RF feed pin of the whip antenna does not touch the PWB, the antenna gain will degrade by more than 25 dB.

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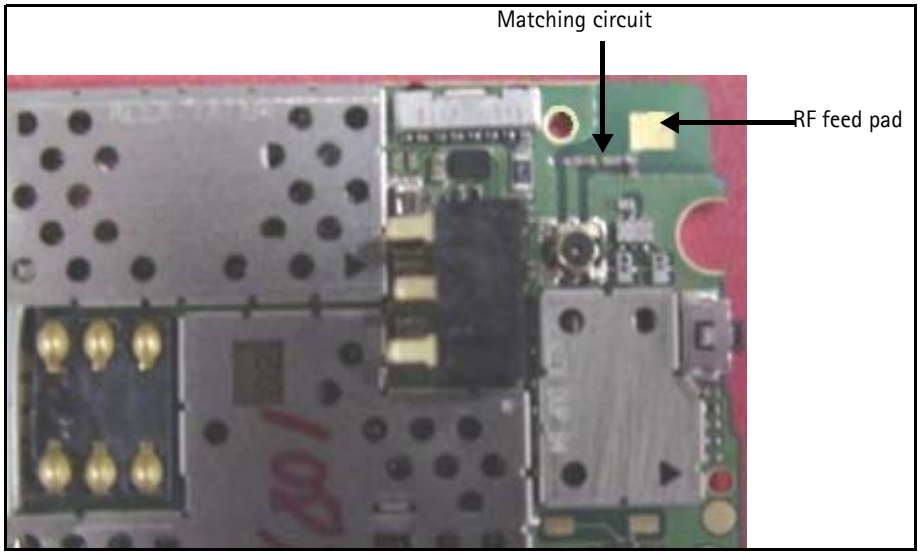

Figure 7: PWB layout of the RF feed pad and the matching circuit

The matching circuit is right next to the RF feed pad. The matching circuit consists of a shunt inductor of 27nH, a series cap of 1.2pF, and a series inductor of 5.6nH. If the matching circuit is not installed properly or any of the components are missing, the extended antenna gain will be degraded by about 25dB and the retracted antenna gain will degrade by about 15dB.

- If corrosion is present or the pad is missing, replace the PWB and the mobile terminal.
- If either pad is obstructed or covered, clear and/or clean the pad.

Broken or Missing Bottom Antenna Clip or Matching Circuit

If the bottom antenna clip does not contact the whip stopper when the whip is fully retracted, the internal antenna gain will degrade by about 4-5dB at Cell band and 3-10dB at PCS band when the whip is retracted.

The bottom matching circuit is right next to the bottom antenna clip and consists of a series cap of 3.3pF and series inductor of 1.5nH. If the bottom matching circuit is not installed properly or any of the two components are missing, then the retracted antenna gain will degrade by about 15dB.

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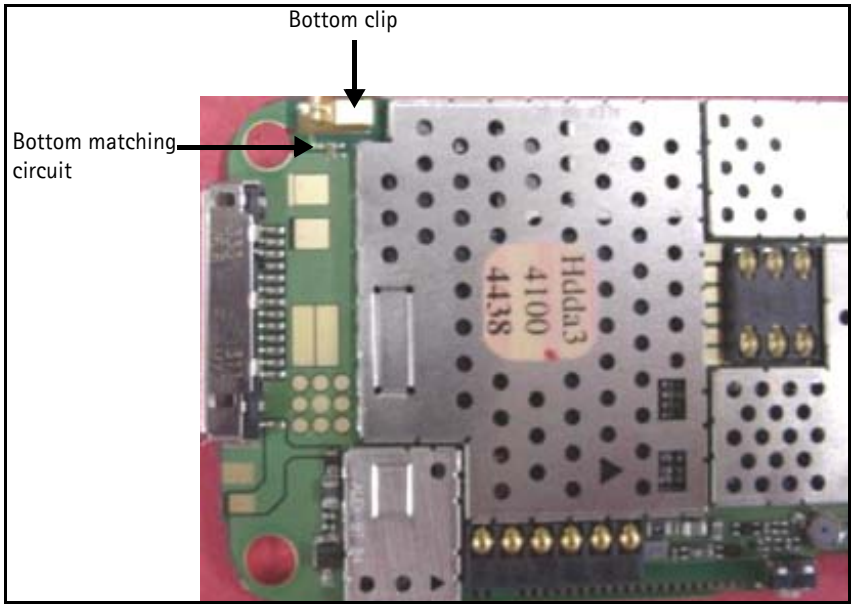

Figure 8: Bottom antenna clip and matching circuit

- If the antenna clip is installed backwards, is damaged, or is missing, install a new bottom antenna clip in the correct position.

Obstructed Whip Stopper

If the whip stopper does not properly contact the bottom antenna clip, then the internal antenna gain will degrade by about 4-5dB at Cell band and 3-10dB at PCS band when the whip is retracted.

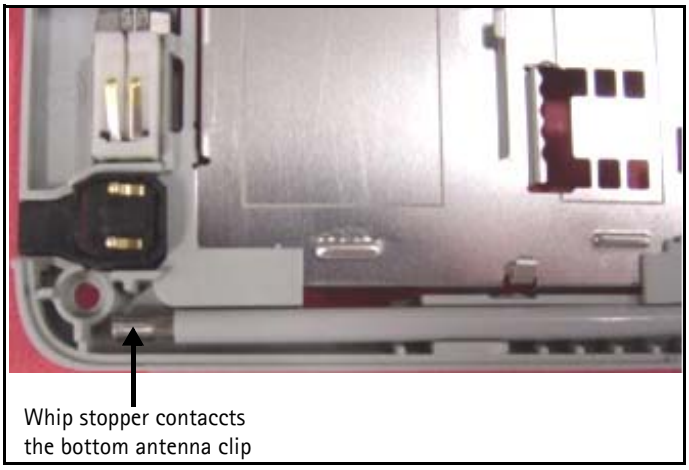

Figure 9: Whip stopper when the whip is fully retracted

- If the whip stopper is corroded or blocked by the whip straw, replace the whip assembly.
- If the whip stopper is obstructed or dirty, remove the obstruction and/or dirt.

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GPS Antenna

The GPS antenna is a ceramic chip soldered on the PWB. It has a matching circuit of series 0R and a shunt inductor of 2.7nH.

Figure 10: Position of the GPS antenna on the PWB

- If the GPS antenna looks obviously damaged, replace it.
- If the GPS antenna is not present, install one.
- If matching circuit is not properly installed or any of two components is missing, install the proper matching circuit..

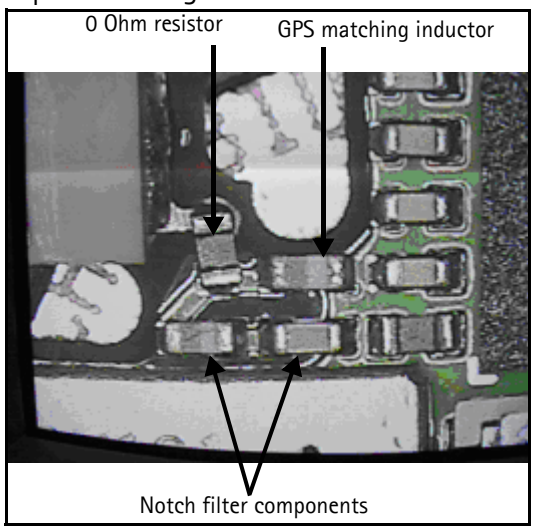

Figure 11: GPS matching circuit components

Bluetooth Antenna

The bluetooth (BT) antenna is an inverted F antenna (IFA) printed on PWB.

Figure 12: BT antenna on the PWB

Perform a visual inspection of the BT antenna to ensure that the edge plating is not corroded, faulty, or peeling.

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